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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,650	05/09/2006	Reinhold Elferich	DE 030387	1792
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EXAMINER				
TRAN, THUY V				
ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/578,650

Applicant(s)

ELFERICH ET AL.

Examiner

Thuy V. Tran

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on amendment filed 01/09/2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-13, 15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-7, 11, 15 and 16 is/are rejected.
- 7) ☒ Claim(s) 8-10, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Final Drawing Review (PTO-849)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to the Applicants' amendment submitted on 01/09/2008. In virtue of this amendment, claims 2 and 14 are canceled, claims 15 and 16 are newly added; and thus, claims 1, 3-13, and 15-16 are now presented in the instant application.

Response to Applicants' arguments

1. Applicants' arguments on the rejections of claims 1 and 4-13 with respect to the teachings of the cited prior art to Pong and Nalbant have been fully considered and are persuasive. Therefore, the rejections of these claims have been withdrawn. However, upon reconsideration, the indicated allowable subject matter of claims 2 and 14 cited in the Office Action mailed 10/10/2007 is hereby withdrawn, and a new ground of rejection to claims 1, 3-5, 7, and 15-16 is being made in view of Muthu et al. (U.S. Patent No. 6,510,995 B2; hereinafter "Muthu") and to claims 6 and 11 is being made in view of the combination of Muthu and prior art of record to Bockle.

Drawings Objections

2. Upon reconsideration, the drawings submitted on 05/09/2006 are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "an input signal representing an input value is achieved by means of an optical coupling, via which coupling the measured output currents of the light emitted by the LEDs are fed back to the DC/AC converter ^{See NOTE,} recited in lines 2-4 of claim 3 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing

sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

NOTE: More specifically, all the features underlined above must be shown in the drawings.

Claim Objections/ Minor Informalities

3. Claims 1, 3-9, 11-13, and 16 are objected to because of the following informalities:

Claim 4, line 2, “several LEDs are joined” should be changed to --the two groups of LEDs comprise several LEDs joining--;

Claim 5, line 2, between “the” and “LEDs”, --two-- should be inserted; and --or the two groups of LEDs-- should be inserted between “LEDs” and “takes”;

Claim 6, line 2, after “the” (second occurrence), --two-- should be inserted;

Claim 6, line 3, --or the two groups of LEDs-- should be inserted between “LEDs” and “are”;

Claim 7, line 2, after “the” (second occurrence), --two-- should be inserted;

Claim 7, line 2, --or the two groups of LEDs-- should be inserted between “LEDs” and “are”;

Claim 8, line 2, “the” (second occurrence) should be changed to --a--;

Claim 9, line 4, between “the” and “LEDs”, --two-- should be inserted; and --or the two groups of LEDs-- should be inserted between “LEDs” and “serve”;

Claim 11, line 2, “the” (first occurrence) should be deleted; “color” should be changed to --colors--; between “the” and “LEDs”, --two-- should be inserted; and --or the two groups of LEDs-- should be inserted between “LEDs” and “comprises”;

Claim 12, line 2, “the” should be deleted; and “color” should be changed to --colors--;

Claim 12, line 3, “comprises” should be changed to --comprise--; and “the” should be changed to --a--;

Claim 13, line 2, “the” should be deleted; and “color” should be changed to --colors--;

Claim 13, line 3, “comprises” should be changed to --comprise--; and “the” (first occurrence) should be changed to --a--; and

Claim 16, line 6, “diodes” should be changed to --two LEDs or two groups of LEDs--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 3, the recitation “wherein an input signal ... are fed back to the DC/AC converter” renders the claim indefinite as it appears to be mis-descriptive. First, the light in no way can possess an output current. Second, it is not clear how to obtain the “measured output currents” while nowhere in the submitted disclosure discloses a device for measuring output currents. Finally, it is not clear whether the measured output currents are fed back to the control unit or the DC/AC converter as claimed. Clarification is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 1, 3-5, 7, and 16 are rejected under 35 U.S.C. 102(a) as being anticipated by Muthu.

With respect to claim 1, Muthu discloses, in Figs. 1-2, a resonant power LED control which comprises a single resonant converter [201, 202, 203, 50, 61, 62, 63] (see Figs. 1-2) for the simultaneous, independent brightness, and color control of two LEDs groups (for instance, RED and GREEN; see Fig. 2), wherein the converter comprises a half or full bridge DC/AC converter (including switch-1 and switch-2; see Fig. 2) with a control unit (which is microprocessor [50]; see Fig. 1), a resonant capacitor (which implicitly included in resonant tank circuit [201] shown in Fig. 2), and a transformer [203] (see Fig. 2).

With respect to claim 4, Muthu discloses that several LEDs are joined together into groups of arrays connected in series each time (see Fig. 1).

With respect to claim 5, Muthu discloses, in Figs. 1-2, a voltage supply of the two LEDs groups takes place via a secondary side of the transformer [203].

With respect to claim 7, Muthu discloses that the transformer has two secondary windings (see Fig. 2) to which the two LEDs groups (RED and GREEN) are connected such that they are supplied with current in succession.

With respect to claim 16, Muthu discloses, in Figs. 1-2, a resonant power LED control comprising a single resonant converter [201, 202, 203, 50, 61, 62, 63] (see Figs. 1-2) operative to provide simultaneous, independent brightness, and color control of two LEDs groups (for instance, RED and GREEN shown in Fig. 1); the converter comprising: a half bridge DC/AC converter (including switch-1 and switch-2; see Fig. 2) with a control unit [50] (see Fig. 1), a resonant capacitor (implicitly included in resonant tank circuit [201]; see Fig. 2), and a transformer [203] (see Fig. 2), wherein the light emitted by the two LEDs groups (or diodes as claimed) form an input value (sensed by sensor [40]; see Fig. 1) for the control unit [50] (see Fig. 1).

With respect to claim 3, Muthu discloses an input signal representing the input value is achieved by means of an optical coupling via which coupling the measured output currents (detected by current sensing elements; see Fig. 2) of the light emitted by the LEDs groups are fed back to the controller [50, 61, 62, 63, 201, 202, 203] (or the DC/AC converter as claimed; see Fig. 1).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muthu in view of Bockle et al. (U.S. Patent No. 6,826,059 B2; hereinafter "Bockle").

With respect to claim 6, Muthu discloses all of the claimed subject matter, as expressly recited in claim 1, except for the LEDs being connected in antiparallel.

Bockle discloses, in Fig. 1, an electronic ballast circuit comprising a resonant converter circuit and a couple of LEDs [D1, D2] connected in antiparallel. Bockle further discloses that in order to utilize both half-waves of the alternating voltage generated by the inverter, it is advantageous to connect a plurality of light-emitting diodes or light-emitting diode arrays in antiparallel so that they are operated in a pulse mode with a maximum of 50% switch-on time in each case (see col. 2, lines 54-60).

Accordingly, to reconfigure the LEDs in the resonant power control system of Muthu in an antiparallel connection as taught by Bockle for such advantage would have been deemed obvious to a person skilled in the art of power electronics.

With respect to claim 11, the combination of Muthu and Bockle disclose all of the claimed subject matter, except for the color of the LEDs being comprised of white and amber/orange. This difference, however, is not of patentable merit since the lighting control system of the combination is already equipped with separate AC/DC converters for each color LED and a microprocessor for executing current pulses to control them such that the power supplied to each LED can be adjusted correspondingly (see Muthu; col. 3, lines 13-19 and col. 4, lines 1-10). Therefore, to reconfigure the LEDs of the combination of Muthu and Bockle in white and amber/orange colors for a desired color output upon a particular application or environment of use would have been convincingly obvious to a person skilled in the art.

11. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Embodiment of Figs. [1, 2] of Muthu in view of Embodiment of Figs. [1, 3] of Muthu.

With respect to claim 15, Embodiment of Figs. 1-2 of Muthu shows a resonant power LED control comprising a single resonant converter [201, 202, 203, 50, 61, 62, 63] (see Figs. 1 and 2) operative to provide simultaneous, independent brightness, and color control of two LEDs groups (for instance, RED and GREEN; see Fig. 2); the converter comprises a half-bridge DC/AC converter (including switch-1 and switch-2; see Fig. 2) with a control unit (which is microprocessor [50]; see Fig. 1), a resonant capacitor (which implicitly included in resonant tank circuit [201] shown in Fig. 2), and a transformer [203] (see Fig. 2). Embodiment of Figs. 1-2 of Muthu does not show filter capacitors which are connected to the two LEDs.

Embodiment of Figs. 1 and 3 of Muthu shows a distributed power system comprising filter capacitors respectively connected in parallel with R-LEDs, G-LEDs, and B-LEDs groups (see Fig. 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the Embodiment of Figs. [1, 2] of Muthu with capacitors and respectively connect each in parallel with one LED group as shown in Embodiment of Figs. [1, 3] of Muthu so as to facilitate the control of currents flowing through the LEDs groups upon a particular application or environment of use since such capacitor-LED parallel connections would provide a reduction of current passing thereby.

Allowable Subject Matter

12. Claims 8-10 and 12-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims with corrections to overcome the objections set forth above.

13. The following is a statement of reasons for the indication of allowable subject matter:

Prior art fails to disclose or fairly suggest a resonant power LED control wherein the transformer has a central tap at a secondary side, to which a common anode or cathode of the LEDs is connected, in combination with the remaining claimed limitations as called for in claim 8 (claims 9-10 and 12-13 would be allowable as being dependent upon claim 8).

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuy V. Tran whose telephone number is (571) 272-1828. The examiner can normally be reached on M-F (8:00 AM -4:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Owens W. Douglas can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thuy Vinh Tran/
Primary Examiner, Art Unit 2821
04/22/2008